

PREFACE

THE INFORMATION TECHNOLOGY IN THE HOME PROJECT

Information technologies (IT)—which includes technologies for data storage and retrieval, computing, and communication, and their direct and indirect applications—are transforming our lives. Although researchers in many fields have gathered data about people’s IT use, the data are of highly variable quality; there has been little integrated analysis, and the overall impact of the phenomena is not clear. Important information about the shape and direction of IT use, and especially its impact in the home, remain uncharted.

In light of the above, the National Science Foundation’s (NSF’s) Division of Science Resources Studies (SRS) contracted with SRI International’s Science and Technology Policy Program to undertake a project on “The Application and Implications of Information Technologies in the Home: Where Are the Data and What Do They Say?” The project’s objective was to develop a consolidated information base for SRS, NSF, and the larger science and policy communities to use in building knowledge on the application and implications of IT in the home and how these vary depending on the household setting and who is using the technology.

The project comprised three main activities:

- inventorying and annotating existing data collections related to an understanding of the application and implications of IT in the home;
- developing an annotated bibliography of articles, books, and reports that present research about or analyses of the application and implications of IT in the home; and
- integrating the findings from this research to present what existing evidence says about the application and implications of IT in the household sector, and identifying any caveats regarding these findings and any significant gaps in coverage.

The data inventory (contained here as appendix A), annotated bibliography (appendix B), and integrated overview (which is the remainder of this report) are

available on the World Wide Web for use by science and policy communities and the general public at http://srsweb.nsf.gov/it_site/it/infotech.htm.

For the purposes of this project, IT is defined as consisting of home computers and other devices for accessing information sources, primarily the Internet. “In the home” is defined as topics related to the use and impacts of IT in or by households, but excluding topics specifically related to home office use, as well as general IT topics such as privacy, decency, security, and IT-based education and electronic commerce, *unless* they are specifically related to the impacts on home users.

Through this project, SRS was particularly interested in building a picture of the applications and impacts of IT in the home and how these vary by population group and household setting. Data resources and literature addressing the following questions are thus included:

- How many households have purchased or otherwise obtained access to IT?
- Who in the household is using IT (e.g., age, sex, education, occupation)?
- What kinds of IT are used, and what are they used for (e.g., education; leisure/entertainment; household tasks, operation, or management; shopping; household records; financial activities; personal communication)?
- What is the impact of IT (for example, on the cost or convenience of household operations; shopping; money management; frequency and nature of interactions among household members, immediate neighborhood and community, and cyber community)?
- How have applications and impacts of IT in the home changed over time?
- What are the key determinants of access to telecommunication links? What are the key determinants of the decision to adopt one or more forms of IT?
- How do the answers to these questions vary among people, groups, and household settings?

THE DATASET INVENTORY

The dataset inventory was assembled from a variety of sources, primarily the World Wide Web (WWW), since most IT-related resources tend to have a substantial Web presence. In addition, several staff members of the Graphic, Visualization, and Usability (GVU) Center at Georgia Tech who are responsible for GVV's WWW User Survey were interviewed.¹ Dataset resources were also identified during the literature annotation phase of the project.

To qualify for inclusion in the dataset inventory, resources had to meet the following criteria:

1. Data on information technology in the home had to be obtained through valid sampling methods, whether random or nonprobabilistic samples.
2. Data had to be obtained from samples of the entire U.S. population.
3. More than 1 year of comparable data had to be available.

The datasets included also needed to be generally available, be based on research that could be generalized beyond the particular study population, and be documented.

These criteria excluded a number of potential data sources. Notably, scholarly works generating original data were not included in the dataset inventory. There are a large number of surveys conducted by academics during the course of research projects. However, these surveys are not generally available to the research community at large. For the most part, these surveys are unrepeatable snapshots, often not generalizable beyond the population of the survey, and often not documented. Thus, scholarly research that generated *original* data is not included in the data inventory. However, these data are covered in the IT Issues Bibliographic Database, particularly among the annotated documents on IT in the home.

Additionally, while sources of other data on IT in the home occasionally surface in the press or on Web meta-sites for IT—including, for example, market research from IntelliQuest, Odyssey, and the Yankee Group, as well as special surveys by trade associations and others—these

were not included largely because no descriptions of the data and methods for these studies could be located.

The data inventory shows that there are only limited sources of data related to the diffusion and adoption of IT in the home that can be reliably generalized to the U.S. population. Moreover, analysis of the inventory's contents reveals three inherent problems in current IT data collection efforts:

1. There is a bias toward access to, and uses of, the Internet. As a consequence, detailed information related to patterns of home computer usage is limited to two sources of data (see point 3 below).
2. The main sources of highly detailed data on Internet access and use are proprietary commercial databases. It is doubtful that these data can be released in any degree of useful detail to the public domain.
3. The two sources of detailed, publicly accessible data on computers and the Internet—the Census Bureau's Current Population Survey and the Technology Survey of the Pew Research Center for the People and the Press—are not conducted on a regular cycle. Since IT adoption and diffusion are occurring rapidly, these surveys are conducted too infrequently to provide timely data and information.

THE ANNOTATED BIBLIOGRAPHY

Written works used to construct the bibliographic database related to the impacts of IT in the home were collected in four ways:

- **Keyword search.** A number of databases were searched using a series of keywords to identify works related to IT in the home. The search process was iterative and was repeated with varying keywords until most results were works appropriate to the topic. The author names that appeared most frequently were then subjected to further searches for additional relevant works. The resulting works were then subjected to a series of computer searches and analyst review to verify relevance. Works of borderline significance were retained.

¹GVU has researched many of the survey and data collection activities about computers and the Internet; these are linked to its website.

- **Networking.** Known experts in the field were queried by e-mail and asked to suggest works they considered particularly important to the topic.
- **Ad hoc discovery.** Relevant works were discovered during Web searches, from reviews of bibliographies of other works, and from voluntary submissions.
- **Bibliographic research.** Nearly 50 bibliographies contained in relevant works were examined. Those bibliographies either confirmed relevant works already on the list or identified additional works to include.

Approximately 100 works were identified as potential candidates for annotation; after these were read and evaluated, the list of candidate works shrank to 30.²

The screening criteria for works to be annotated were relatively generous. Basically, if an item of literature focused on IT in the home, if it came from a credible source, and if it passed modest standards of rigor, it was included as a candidate. Several reasons explain why relatively few works met these criteria:

1. The topic (IT in the home) is rather narrowly confined to impacts within the home itself.
2. Much of the IT/home/society literature is highly philosophical and speculative, and therefore not appropriate to a project to identify primarily scholarly and empirical works.
3. There was a notable amount of mismatch between titles and abstracts of works and their actual content. Studies that, on their face, should have been highly relevant to this project turned out to be nothing more than rhetoric or discussions of new technologies.
4. Scholars may publish several similar versions of their work; when such duplications were found, only one was included among the annotated works.

There are two notable gaps in the scholarly literature. The first is the virtual absence of true impacts analysis and research; rather, most empirical studies focus on home IT adoption and use patterns. Second, the research on the adoption of home computers dates from the early to mid-1980s; the accelerated adoption of home personal computers in the 1990s has gone more or less unexplored, although at least one large study is currently under way.

THE INTEGRATED OVERVIEW

The following sections present an integrated overview of the data resources and major works related to the application and implications of IT—that is, home computers and other devices for accessing information sources, primarily the Internet—in the home. This material thus summarizes the state of knowledge and data on home IT diffusion, adoption, patterns of use, and impacts.

²Some very recent works that may have been published since the searches were undertaken may be missing from the list, but this is a perennial problem given the pace of development in the IT field.

